

### STEP 3: WHAT TYPE AND QUANTITY OF IMPACTS ON WATERS OF THE US WILL RESULT FROM THE ACTIVITY AND WILL THE IMPACTS BE MITIGATED?

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The third step is to identify the anticipated type (permanent or temporary) and quantity of impacts on waters of the US, and determine whether those impacts will be mitigated.

#### A. Definitions and Examples

In general, anticipated impacts on waters of the US can be categorized as permanent (long-term) losses or temporary (short-term) disturbances. The Corps defines the permanent **loss of waters of the US** as:

“...waters of the US that include the filled area and other waters that are permanently adversely affected by flooding, excavation, or drainage because of the regulated activity. Permanent adverse effects include permanent above-grade, at-grade, or below-grade fills that change an aquatic area to dry land, increase the bottom elevation of a waterbody, or change the use of a waterbody....” (Corps 2002a).

Within the context of common ADOT activities, permanent losses of waters of the US can result from:

- placement of concrete to extend a culvert
- channelization of a wash to reduce roadway flooding
- placement of pavement to construct an at-grade roadway crossing

In contrast, temporary disturbances of waters of the US are typically attributed to discharges that will be mitigated such that preconstruction conditions, including contours and elevations, and/or uses are restored.

Within the ADOT context, temporary disturbances of waters of the US can result from:

- temporary stream diversion to accommodate bridge construction
- installation and removal of a temporary culvert as part of a construction detour
- construction of a temporary construction access road
- replacing/maintaining fills that encroach on previously permitted impacted waters of the US



## B. Methodology

The activity scope and type and quantity of anticipated impacts on waters of the US are identified through careful review of design plans and close coordination with design personnel.

Permanent losses and temporary disturbances are most commonly quantified in two-dimensional surface area/acreage surface area. Figure 1, Example of Temporary and Permanent Impact Area Calculations, depicts temporary and permanent impacts and associated impact calculations anticipated with a typical concrete box extension project.



Three-dimensional discharge calculations (dredged and fill materials quantified in cubic yards) are required for Nationwide Permit (NWP) preconstruction notification (PCN) submittals and Individual Permit applications.

## C. Mitigation

Within the context of Section 404, mitigation is intended to "...offset adverse effects on the aquatic environment that are more than minimal." Mitigation measures are actions taken to avoid, minimize, rectify, reduce, or compensate permanent losses or temporary disturbances of waters of the US, and depending on the measure, are implemented prior to, during, or following construction.

The Corps emphasizes the importance of identifying mitigation measures that are both applicable to and practicable for the activity.

"To be practicable, the mitigation must be available and capable of being done considering costs, existing technology, and logistics in light of the overall...[activity]...purposes. Examples of mitigation that may be appropriate and practicable include, but are not limited to: reducing the size of the...[activity]; establishing and maintaining wetland or upland **vegetated buffers** to protect **open waters**...; and replacing losses of aquatic resource functions and values by creating, restoring, enhancing, or preserving similar functions and values, preferably in the same watershed."

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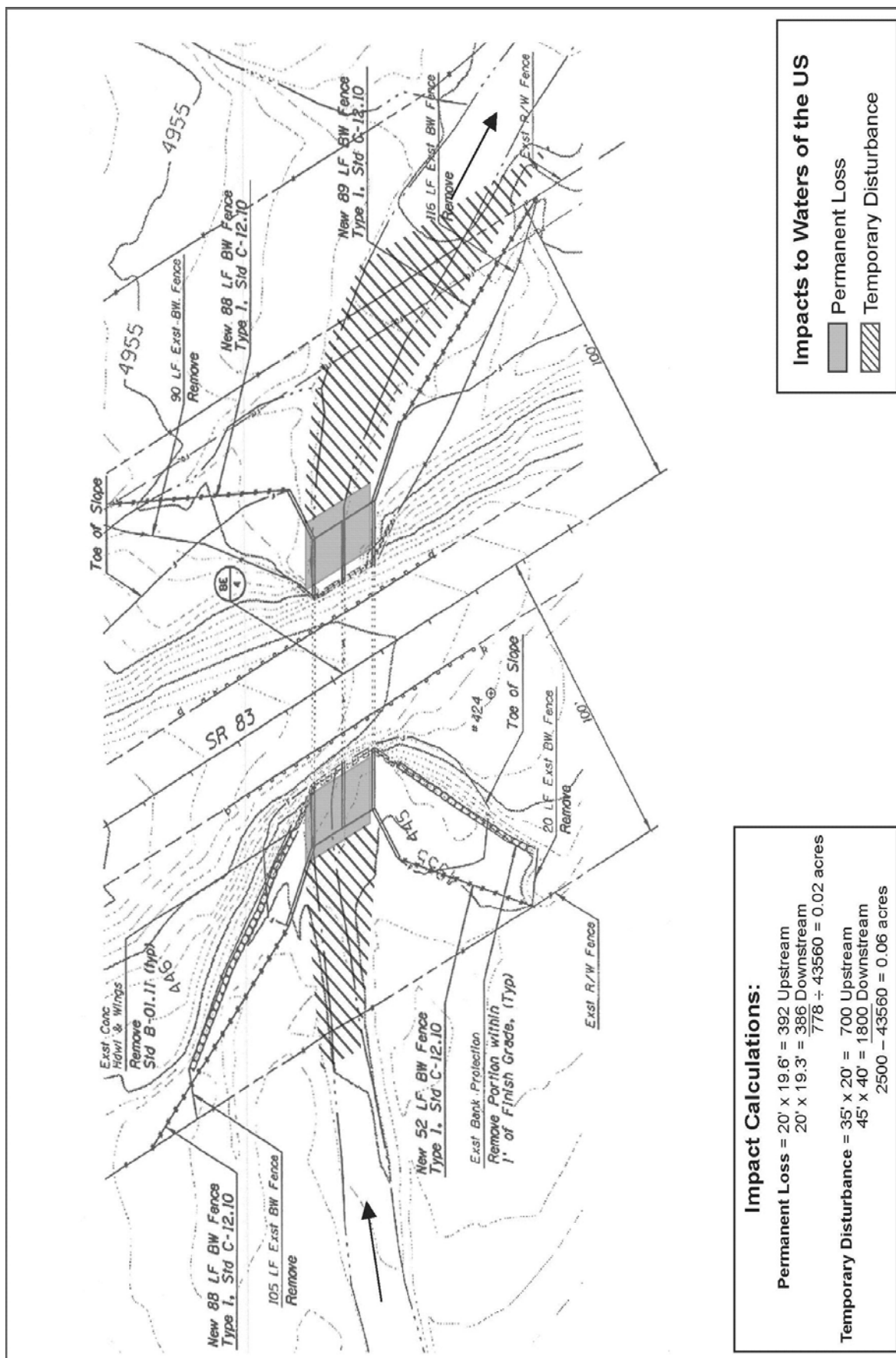


Figure1. Example of Temporary and Permanent Impact Area Calculations.

Mitigation measures can be differentiated by their timing (prior to, during, or following construction), intended effect (impact avoidance, minimization, rectification, reduction, or compensation), and location (at the site of the activity or off-site). For example:

- permanent loss can be avoided on-site prior to construction through design alternatives
- temporary disturbance can be minimized on-site during construction through careful detour placement and recontouring/regrading
- permanent loss can be compensated off-site following construction through an in-lieu fee arrangement (defined below)



**Compensatory mitigation** is defined as:

“...the **restoration, creation, enhancement**, or in exceptional circumstances, **preservation** of wetlands and/or other aquatic resources for the purpose of compensating for unavoidable adverse impacts which remain after all appropriate and practicable avoidance and minimization has been achieved” (Corps 2002a).

Compensatory mitigation is typically documented in a stand-alone report, as an additional component of a Section 404 NWP PCN or Individual Permit application, and is not generally required for non-notifying NWPs (defined in later sections). Some examples of compensatory mitigation include:

- planting of native vegetation (pole plantings, container plants)
- restoring a diverted water course to its natural **channel**

If on-site conditions are not conducive to applicable/practicable mitigation measures (e.g., the activity site is too small), off-site compensatory mitigation can be implemented through the use of **mitigation banks** or in-lieu fees.

“The objective of a mitigation bank is to provide for the replacement of the chemical, physical and biological functions of wetlands and other aquatic resources which are lost as a result of authorized impacts. Using appropriate methods, the newly established functions are quantified as mitigation ‘credits’ which are available for use by the bank sponsor or by other parties to compensate for adverse impacts” (Corps et al. 1995).

“**In-lieu-fee mitigation** occurs in circumstances where a permittee provides funds to an in-lieu-fee sponsor instead of either completing project-specific mitigation or purchasing credits from a mitigation bank...” (Corps et al. 2000).

The Corps has developed numerous guidance documents to assist activity proponents in the identification of applicable and practicable mitigation measures. The primary guidance document, entitled Special Public Notice—Final Mitigation Guidelines and Monitoring Requirements, is available on-line at:

[http://www.spl.usace.army.mil/regulatory/mmg\\_2004.pdf](http://www.spl.usace.army.mil/regulatory/mmg_2004.pdf)

The Corps has the discretion to approve or reject the mitigation measures identified by an activity proponent, and can identify additional, activity-specific mitigation measures that must be implemented in order for a permit to be valid. After approval by the Corps, mitigation measures identified for the activity are included in the environmental clearance and/or project specifications, as appropriate.

Three additional documents pertaining to Section 404 mitigation are provided in Appendix 2, 3, and 4:

- Appendix 2: Guidance on Compensatory Mitigation Projects for Aquatic Resource Impacts Under the Corps Regulatory Program Pursuant to Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899 (Corps et al. 2002)
- Appendix 3: Federal Guidance for the Establishment, Use and Operation of Mitigation Banks (Corps et al. 1995)
- Appendix 4: Federal Guidance on the Use of In-Lieu-Fee Arrangements for Compensatory Mitigation under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act (Corps et al. 2000)